NPIC/TSSG/RED-1935-69
21 November 1969

MEMORANDUM FOR THE RECORD

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25X1 1. [redacted] mentioned the fact of a source of near east photography we were not aware of--he suggested we check with NRTSC.

2. We're in the color business (all). The pay off from the last take indicates that the optimistic predictions of color utility are probably correct.

3. Army Ground order of battle resolution studies ([redacted] 25X1 Air Force). Extensive.

25X1 4. MTF/OTF Analyzer [redacted] DDS&T) Advises that camera systems are specified by MTF and offers to make these techniques available to us.

5. Chip System [redacted] performed a 25X1 chip study five years ago. Also there were many others monitored thru ISCIG.

25X1 6. Dry Silver [redacted] Westover has written [redacted] to "stimulate" 25X1 their delivery of print material--Westover believes foot dragging is going on.

7. Precise Measurement Study [redacted] NPIC). The need for 25X1 a PI oriented film distortion study (presumably [redacted] was reiterated. 25X1
25X1 [redacted] and the CCB concurred that they would support such a study.

8. Improved Resolution Target [redacted]. He has supported study by 25X1
25X1 [redacted] in this regard and will make a copy available to us.

25X1 9. Color [redacted] NRTSC has completed a Color Report. Charlie will try to get one for us.

10. Automatic Target Indexing [redacted] He is interested 25X1 in a possible add-on order. I gave him [redacted] one year for chinese copy. 25X1 He is interested in having this capability at [redacted] pointed out 25X1 that there is a dilemma in the absence of policy for collection program utilization of such a system.

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11. Briefing on R&D Program [redacted] 25X1

a. Color film processors
b. Color film dryer
   (1) Microwave
   (2) Vacuum
c. Wide Film Color Processor (70mm - 9.5 inch) 100 ft/min called Spectrum Spray Color Processor
d. [redacted] Two Station Printer 25X1
e. Flat Bed Printers offer a significant advantage? They are developing one which gives 570 l/mm minimum resolution over the entire frame. [redacted] described a simple uniform light source for contact printers (B&W and color) developed at [redacted] He is also convinced that the air gate is a good means for obtaining intimate contact. 25X1 25X1
f. [redacted] RS Material 25X1
"We conclude that progress to date warrants accelerated development of production capability."

12. Note: The following paragraphs relate to [redacted] briefings given on 19 November 1969. 25X1

13. Color Tutorial Session [redacted] 25X1

a. Film types
   (1) Reversal - Acq. or Dup.
   (2) Negative - Positive Acq. and/or Dup.
   (3) Mixed - Reversal/Interneg.
b. Subjective Evaluation necessary. Cannot be overemphasized. There is no suitable system for objective evaluation of color film performance at this time.
c. SO 242 is far superior to every other [redacted] color film for our acquisition systems. Further improvements can be made. SO 180 is completely inadequate. 25X1
d. SO 242 Color processing speed is 7½ ft/min.
e. Best Duping Combination
   (1) 7271 - interneg
   (2) 7380 - 3rd stage positive
   (3) 4 ft/min processing rate
   (4) 6110/6109 dupe materials at NPIC
f. Approx. 35X maximum enlargement for original (SO 242) positive
g. Three objectives of present [redacted] color development program 25X1

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(1) High Performance Conventional Color acquisition material
(2) [redacted] 25X1
(3) High Performance Color Duping materials

f. SO 242 may be changed to neg-pos

[redacted] 25X1

25X1 15. [redacted] Color Equipment Situation [redacted] 25X1

a. Processors - Current highest speed 7½ fpm
b. On Order two 1811 Versamats 4 fpm
c. Under development MP² SO 242 - 8 fpm; SO 360 - 18 fpm
(1) Fultron front end, dryer and wind-up
(2) 24 processing tanks
(3) 18 months away
(4) 31-40 feet long
(5) First Mod to be at [redacted] Hawkeye 25X1
d. Color Printers and Enlargers
(1) Contact printers 50 fpm (additive vs. subtractive)
(2) HPE Breadboard Enlarger
(a) additive exposures 5 min.
(b) subtractive exposures 1 min.
(3) Development
(a) Xenon lamps
(b) Improved slit condensing system
(c) (Problems of diffuse and specular illumination)
(d) Proposed Color Enlarger

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(e) Contact Printer Development Needed
(f) Basic Knowledge needed

e. Color Repro Support Equipment
(1) Edge flasher for optical titling
(2) Densitometer modifications
(3) Color Densitometry in general
(4) Color Analyzer
(5) Color Viewer Study
(6) Production Facility to house this effort.

25X1 16. Summary [redacted]

a. Many changes in store
b. Many unknowns
c. Very likely change the SO-242 to a neg-pos process
d. Must be used to stimulate interest

17. Requested a summary report from [redacted] on this color briefing 25X1
to be delivered before Christmas [redacted] 25X1

18. Noted the significance of the chip concept to the advent of significant quantities of color [redacted] 25X1

19. Requested estimates of comparative costs of Color vs. B&W 25X1
[redacted] answered as follows:

a. Acquisition: 2 to 1
b. Reproduction: 5 to 1
(Might be reduced to 3 to 1 by processing SO-242 as a negative)

20. Silver Discussion [redacted] sees no problem. Many 25X1
inactive mines are reopened as silver price goes up [redacted] 25X1
25X1 [redacted].

25X1 22. PAR 176B [redacted]. Production Oriented Color Enlarger, (POCE).

a. For easing customer duplication
b. Based on SARANAC printer and the HPE
c. Light tight housing
d. Easel rotation
e. Roll stock reproduction system
f. Subtractive Illumination System
g. Rapid Exposure
h. Simplicity of setting three color numbers the real secret of production orientation.

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i. 26 months to develop
j. 5X and/or 10X enlargement?
k. 11" x 14" size

22. The resolution (200 l/mm) and diagonal 3.8" product = approx. 18,000 cycles the maximum performance of current operational optical systems--a quazi bandwith figures [redacted]. 25X1

25X1 23. PAR 175B [redacted] Video Color Analyzer.

a. Color densitometry difficulty.
b. Based on existing equipment marketed by [redacted] but produced by [redacted] 25X1 25X1
25X1 c. Modification cost [redacted] + 23 months.
25X1 d. Kaleidescope [redacted] computer program brought up
25X1 by [redacted] as superior to and obviating the Video Color Analyzer.

25X1 24. PAR 177S [redacted] Narrow Band Color Viewer

a. Based on Beer's law.
b. [redacted] 25X1
25X1 c. [redacted] suggests getting the review performed.

25X1 25. PAR 24-0-8S ([redacted] High Altitude Color Acquisition Criteria. (Real Dot Program)

a. 350-900 millimicrons
b. Six Red Dot tests to be scheduled for evaluation of
25X1 [redacted] 25X1
c. Four basic types of soil reflectance.

[redacted]

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[redacted] 25X1

25X1 30. PAR 157S/RI [redacted] Contact Printing Distortion

a. New G terrain camera 5" width UTB
b. Communication channels

31. PAR 173B [redacted] Automatic Scene 25X1
Camera.

25X1 a. Evaluation of [redacted] model
25X1 b. Evaluation of [redacted] bench camera
25X1 *c. Check with [redacted] on powerspectrum analysis [redacted] 25X1
d. Objective: To bridge gap between processing and exploitation functions. How? To produce identical test materials for evaluation by different elements of the community.
25X1 e. [redacted] Model--arrange for comparison if possible.

32. Declaration of Business Transactions [redacted] 25X1
25X1 [redacted].

a. Good color report
b. PAR 176B. Color-Oriented Production Enlarger. Approved for funding.
c. PAR 175B Video Color Analyzer. Deferred for further study--demonstrate concept.
*d. PAR 177S (NPIC). Narrow Band Color Viewer. Deferred pending inputs from NPIC.
e. PAR 24-0-8S. Study of Characteristics, etc. Approved for funding.
f. PAR 173B. Automatic Scene Camera. Approved for funding.

25X1 33. Next Meeting [redacted]. Mid-February on West Coast.

34. Precise Measurement Study Briefing. [redacted] NPIC/PSG/PHD) 25X1

25X1 a. [redacted] concerned about the utility and coordination of the various mensuration studies.
25X1 b. [redacted] indicated that RED is aware of and accomplishing this coordination.
25X1 c. [redacted] was again reminded of the need for further emulsion distortion analysis specifically related to the short dimensions characteristic of NPIC operations.

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35. Liquid Gate Contact Printing to Remove Artifacts - Newton rings, scratches, dirt, etc. [redacted] NPIC/TSSG/APSD). 25X1

a. Modified Niagara Printer with Liquid Gate reproduces imagery and removes most of the artifacts normally experienced.
b. NPIC is not particularly concerned about the presence of these artifacts.
c. These artifacts may cause serious problems on the Automatic Target Indexing Device.

36. Effects of Dual Gamma Processing on Mensuration (of small images) [redacted] NPIC/TSSG/RED). 25X1

a. Summarized the [redacted] Draft Final Report on Project 6680 as follows: Study indicates there is not significant difference in mensuration caused by dual gamma processing. 25X1
b. [redacted] very preliminary evaluation of the study is that it is not conclusive.

37. Color Image Assessment Briefing. [redacted] 25X1

25X1 [redacted]

[redacted] 25X1

Special Assistant for Plans & Applications,
RED

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25X1 1 - NPIC/IEG (Attn: [redacted]
1 - NPIC/PSG (Attn:
1 - NPIC/PPBS (Attn: